

Low-Cost Launch Propulsion Stage and Deployment Bus for Smallsats, Phase I

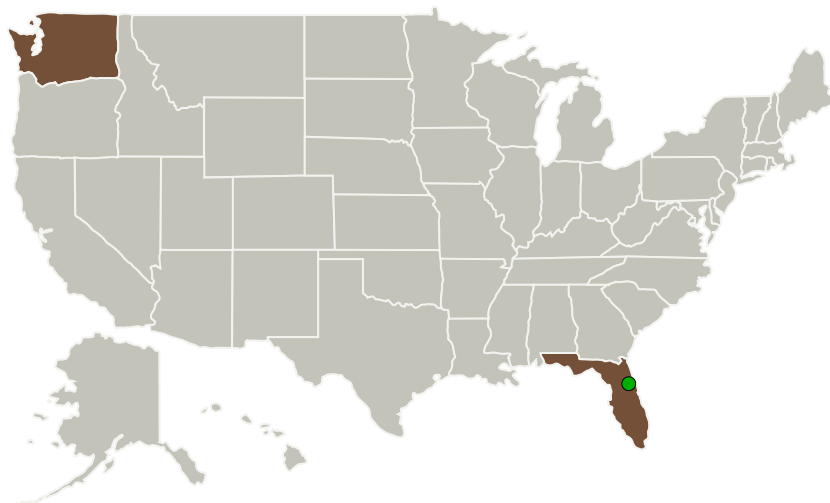
Completed Technology Project (2017 - 2018)




Project Introduction

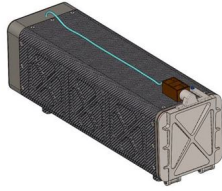
Systema Technologies is teaming with the University of Washington to design, manufacture, and test a first-stage propulsion booster system and a picosatellite orbital deployer capable of mitigating hazards associated with propulsion-capable CubeSats. The total launch system seeks to deliver picosatellites and/or smallsat 5-50 kg payloads into LEO, including an innovative hazard-mitigation picosatellite orbital deployer (SAF-POD) developed by Systema. This technology has the potential of increasing first-stage thrust, specific impulse, and total impulse during the initial boost phase of ascent. Phase I will include system analyses and trades to scope a feasible SAF-POD design that has the hazard containment necessary to allow for launches of propulsion-capable CubeSats as secondary payloads. As picosatellites develop greater capabilities the need to include propulsion systems grows, but there is currently no approved method for delivering hazardous CubeSats into orbit as secondary payloads per NASA safety requirements. The SAF-POD technology will be developed to operate as a light-weight CubeSat deployer that protects primary payloads from CubeSat hazards.

Primary U.S. Work Locations and Key Partners





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Preliminary SAF-POD Design

Low-Cost Launch Propulsion Stage and Deployment Bus for Smallsats, Phase I Briefing Chart Image

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Organizations Performing Work	Role	Type	Location
Systema Technologies, Inc.	Lead Organization	Industry	Kirkland, Washington
● Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida
University of Washington-Seattle Campus(UW)	Supporting Organization	Academia Alaska Native and Native Hawaiian Serving Institutions (ANNH), Asian American Native American Pacific Islander (AANAPISI)	Seattle, Washington

Primary U.S. Work Locations

Florida	Washington
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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Systema Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

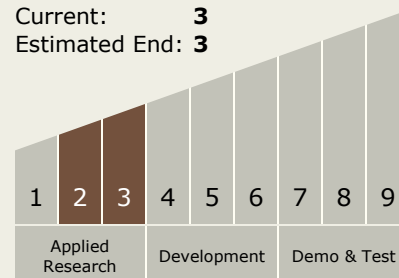
Mark Fiebig

Technology Maturity (TRL)

Start: 2

Current: 3

Estimated End: 3



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Images



Briefing Chart Image

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(<https://techport.nasa.gov/image/136490>)

Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.3 Aero Propulsion
 - └ TX01.3.1 Integrated Systems and Ancillary Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System